



THE TRANSITION

European Perspectives on a New Transatlantic Agenda

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The Bertelsmann Foundation (North America), Inc., established in 2008, was created to promote and strengthen the transatlantic relationship. Through research, analysis, forums, and audiovisual and multimedia content, we seek to educate and engage our audience on the most pressing economic, political, and social challenges facing the United States and Europe. We are the U.S. arm of the Germany-based Bertelsmann Stiftung.

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The Transition

The Transition project focuses on the pressing challenges in need of Euro-American alignment as the center of gravity shifts from President Trump to President Biden.

This hybrid initiative, comprised of a six-episode video series and a dynamic briefing book aims to inform policymakers, to spark a debate, and to pave a path forward for European and American partners in search of renewed collaboration in the years ahead.

All episodes and chapters are available on:

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The Next Four Years of Technology Policy

By Jeffrey Brown

I. ISSUE OVERVIEW

In a normal year, technology and innovation are key to propelling economic growth at home and American influence abroad. But 2020 has been anything but normal. COVID-19 has supercharged the adoption of new technologies, furthering the digitalization of almost every sector of our economy and aspect of our lives.

Over the next four years, great technical leaps will be made in cross-cutting technologies such as artificial intelligence (AI), quantum computing, robotics, and genomics, among many others. These technologies will affect every facet of our lives, and they will help shore up America's influence abroad for generations to come.

While many of us have a vague notion that coming technologies will "transform" our lives, the systems and policy mechanisms that guide how they will do that remain underdeveloped or nonexistent. Unfortunately, the blistering pace of innovation rushes past us while we're deliberating how best to exploit new technologies, or at least control how they change our lives. As a result, we're prone to misunderstandings and vulnerable to an ever-growing list of threats.

The development of new technologies is often viewed solely as an engineering challenge, with Americans simply adapting to whatever wizardry emanates from Silicon Valley. In the end, this one-way approach saps public support for new technologies, slows their implementation, and threatens the long-term digitalization that we need to grow prosperity at home and remain competitive in an increasingly fractious world.

America's less-than-stellar response to COVID-19 hammers home the need to replace scattershot improvisation with forward-looking, clear-sighted policy development. The White House should not waste this golden opportunity to reboot America's technology policy.

II. POLICY OBJECTIVES

The COVID-19 crisis shows that technology and innovation are critical building blocks of American prosperity and resilience. But channeling investment into the development of new technologies and hoping for the best will no longer suffice. Given their wide-ranging impacts on everything from civil liberties and the future of work to medicine, we need systems and processes that harness new technologies so they benefit all Americans rather than just some Americans.

We'll need to start with a broad focus on dialogue and policy. In its technology rivalry with China, America should recall where its competitive advantages lie: in fostering dialogue, ideas, and innovative policymaking. And unlike pretty much any other issue in Washington, support for new technologies is broadly bipartisan. Beefing up technology policy is no longer optional, to be done at a leisurely pace; it is a national imperative if we are to preserve American competitiveness in the 21st century.

America needs far more agile and iterative approaches to crafting technology policy as we develop and deploy the next indispensable technologies. We must get better at predicting what conflict and dislocation even seemingly innocuous innovations could visit on the lives of Americans and people around the world. In doing so, we maximize new technologies' benefit

to society while guaranteeing a virtuous cycle of innovation for future generations.

The White House should set three key objectives for an overhauled technology policy:

1. Draw on expertise across a broad array of disciplines to educate policymakers and the public about new technologies and their wide-ranging policy implications.
2. Build citizens' trust in new technologies in order to supercharge their adoption and scaling.
3. Recognize America's technology policymaking as a core strength and use it to reinforce and forge new alliances abroad.

III. TECHNOLOGY POLICY ACTION ITEMS

1. Build Technology Policymaking Capacity

Today, policymakers face the daunting task of developing 'good' public policy around technologies that have already won widespread public acceptance. Examples include retroactive steps to legislate how ridesharing companies operate, or the use of facial recognition after it has been deployed.

In the past, policymakers could get away with a laissez-faire regulatory stance due to the slow-moving nature of platforms and their incremental implementation. Next-generation advances in technologies such as AI will happen more quickly, cutting little slack for policymakers tasked with ensuring they benefit all Americans. This is precisely why the White House should start building a strategic reserve of technology policymaking capacity now. First, the White House should develop networks and develop networks to learn about new technologies and their policy impacts. A first step could involve a collaboration between technologists and policymakers from various disciplines to develop a menu of public policy approaches around new technologies. The collaboration could build concrete roadmaps for the widespread adoption

of autonomous vehicles or assess the impacts of AI on health care. Scenario planning and strategic foresight provided by think tanks and the Office of Science and Technology Policy (OSTP) could help both policymakers and the public alike envision the impact new technologies will have on their lives. Ideally, these efforts would reach far beyond the OSTP to include Congress, states, cities, and nonprofit organizations. Since new technologies will impact hundreds of millions of Americans, policy approaches should be presented to the public for input, in much the same way that participatory budgeting is conducted. And since new technologies will evolve rapidly, policymakers should ensure that a feedback loop of policymakers, industry, and citizens is constantly improving and refining ideas.

If they follow these steps, policymakers could break out of the counterproductive cycle of instituting public policy after technologies are launched and scaled.

2. Boost Citizens' Trust in New Technologies

The events of 2020 have rocked confidence in institutions and democracy itself. The proliferation of conspiracy theories surrounding 5G and the spread of COVID-19 shows how much work policymakers will have to do to overcome public skepticism of new technologies.

While America has been a traditional testbed for new technologies such as the iPhone and the internet, surveys show middling public trust in the next wave of technologies. Polls by the Brookings Institution found that 57 percent of respondents had seen "fake news" during the 2018 election, just 21 percent were willing to ride in a self-driving car, and 52 percent thought robots would perform most human activities in 20 years. Put simply, the public fear the next wave of technology will hit them where it hurts most: their work, their democracy, and their safety.

It is impossible to develop sustainable policy around new technologies without broad public support for

the promises they offer. In order to head off a 21st century Luddite movement, the White House should work to build public trust through radical transparency and by inviting citizens into the policymaking process. Technology companies should be encouraged to include a wide range of stakeholders in the product development cycle. Citizens should have access to the policymaking process so they can intervene while a product is still on the drawing board. Furthermore, cultivating public trust in new technologies at home provides a strong base from which to work with allies abroad.

3. Export America's Technology Policy – Not Just Its Technologies

By default, America has focused on exporting new technology products to the world, with short shrift given to their policy implications. For example, in 2011, American social media platforms Twitter and Facebook played an outsized role in sustaining protests during the Arab Spring, impacting the lives of millions of people and upending decades of foreign policy orthodoxy.

When they do engage, America's diplomats often focus on pushing common standards and guardrails around new technologies that reflect overarching values rather than rigorous technology policymaking. This is not surprising, as the craft of technology policymaking has fallen by the wayside at home.

When it comes to new cross-cutting technologies such as AI and quantum computing, the White House needs a radical rethink on how it engages with the world. Rather than focus on the export of technologies themselves, the White House should hone in on its ability to develop and export technology policymaking as a core element of its foreign policy.

We know that new technologies will open up a Pandora's box of new complications that will be impossible to untangle on our own. Forging bonds

with existing allies and foes alike builds goodwill and furthers the export of not only America's technical prowess, but also its policymaking. America can also use the export of technology policymaking as a way of differentiating itself from the monodirectional efforts of China.

TACKLING TECHNOLOGY POLICY IN 2021

WHILE WE HAVE A VAGUE IDEA THAT NEW TECHNOLOGIES WILL "TRANSFORM" OUR LIVES, THE SYSTEMS AND POLICY MECHANISMS THAT GUIDE HOW THEY WILL DO THAT REMAIN UNDERDEVELOPED. HERE ARE SOME SIMPLE STEPS THAT THE WHITE HOUSE CAN TAKE TO ENSURE THAT TECHNOLOGY POLICY WORKS FOR ALL.



NEW TECHNOLOGIES HAVE GENERATED UNINTENDED CONSEQUENCES AND ANGST:

- 70% of Americans say 'fake news' has impacted their confidence in government¹
- Just 21% are willing to ride in a self-driving car²
- 52% think robots will perform most human activities in 20 years³

THE WHITE HOUSE SHOULD:

- Build technology policymaking capacity
- Boost citizens' trust in new technologies
- Export 'good' technology policy – not just technologies

IF THE WHITE HOUSE AND SILICON VALLEY DEVELOP TECHNOLOGY POLICY TOGETHER:

- Citizens' trust in new technologies is boosted
- Communities maintain a voice in how new technologies impact them
- Companies speed the scaling and implementation of their technologies

¹<https://www.theguardian.com/us-news/2019/jun/06/fake-news-how-misinformation-became-the-new-front-in-us-political-warfare>

²<https://www.brookings.edu/blog/techtank/2018/07/23/brookings-survey-finds-only-21-percent-willing-to-ride-in-a-self-driving-car/>

³<https://www.brookings.edu/blog/techtank/2018/06/21/brookings-survey-finds-52-percent-believe-robots-will-perform-most-human-activities-in-30-years/>

*Vector illustration (right) - vecteezy.com



Transatlantic China Policy

By Bernhard Bartsch

I. ISSUE OVERVIEW

Although the Trump administration has been a stress test for transatlantic relations, the last four years have also been a period of remarkable convergence in views toward China. Both the United States and Europe have come to openly acknowledge that the country Xi Jinping leads is a very different China than the one that both sought to work with in partnership over the past decades.

It is now a political mainstream view that the Chinese Communist Party (CCP) has become considerably more assertive, demanding, unyielding, confrontational and punitive in its international posture. Internally, China appears substantially more repressive in multiple domains.

With “engagement” no longer the sole or even predominant paradigm for framing policies toward China, it has become common to talk about a joint transatlantic “China challenge” and thus a coordinated “China policy.” For the time being, this appears to be more of an ambition than a reality. Even within the EU, a joint “China policy” is only just emerging, but to the EU’s credit, policies vis-à-vis China are an area of remarkable and fast progress.

There are high hopes that China policy may become one of the domains where the overlap of interests is so considerable that it could be a catalyst for repairing the transatlantic partnership. For that to happen, the U.S. and Europe need a portfolio of initiatives that range from “low-hanging fruit,” where they can make quick progress and build confidence, to more ambitious projects that go to the heart of stabilizing and reforming the global order.

II. POLICY OBJECTIVES

U.S. and European interests and perspectives on China overlap substantially, but important differences remain. Acknowledging these differences is a prerequisite for developing a meaningful agenda.

The American “strategic competition” framework tends to view China through a geostrategic lens, particularly as more spheres of the U.S.-China relationship, such as trade and research collaborations, are linked to American security. Europeans, meanwhile, take a more varied view of China as simultaneously a partner, an economic competitor and a systemic rival. Although the balance has tipped sharply from cooperation to competition, it is hard to overstate how the erosion of transatlantic trust under the Trump administration has led to concerns in Europe that the EU could be trapped in the middle between the two world powers, with both the United States and China trying to undermine its unity and economic might.

Rebuilding trust and coordination, therefore, is the sine qua non for a transatlantic China policy. For Europeans, confidence in the partnership will rely not only on bilateral ties, but also on a strong U.S. re-commitment to multilateralism. On this basis, there could be strong momentum for joint approaches to the economic and technological “China challenges” as well as—more ambitiously—security concerns.

1. Fostering coordination concerning China at all levels in the spirit of multilateralism.
2. Untangling economic and technological dependencies vis-à-vis China.
3. Forging a shared vision for security in the Asia-Pacific region.

III. TRANSATLANTIC CHINA POLICY ACTION ITEMS

1. Fostering Coordination Concerning China at all Levels in the Spirit of Multilateralism

To develop a transatlantic agenda, the EU and United States need to step up intergovernmental and nongovernmental discussions concerning China at all levels. There is already considerable momentum. In October 2020, the secretary of state and the EU foreign minister began a new EU-U.S. dialogue on China, elevating the long-standing working-level talks to cabinet level. More such dialogues must be launched and institutionalized, as China increasingly becomes a “whole of government” issue. On the Track 1.5 and 2 levels, some formats are well-established and should be expanded to prepare the ground for concrete policy cooperation.

Europeans hope that such trans-Atlantic coordination will be a foundation for rebuilding multilateral frameworks that extend beyond EU-U.S. relations. Europe relies on multilateral and multinational approaches to China and foreign policy more generally. It hopes that the Biden administration will vigorously reengage with international allies, partners and institutions to forge broad-based coalitions to deal with the challenges that China poses to all. Discussions should therefore include what have become known as “like-minded countries,” in particular Japan, South Korea, India and Australia.

Of course, to avoid an escalation of frictions with China, Beijing’s concerns must be taken seriously. The CCP will see or at least frame all coordination efforts as a scheme to contain China. Washington and Brussels must make clear that they do not seek to deny China its rightful place in the world, but rather to protect multilateralism and level playing fields and to define red lines, where the fundamentals of a stable global order are under threat. The ultimate aim must not be to isolate China, but to convince Beijing that it is in China’s long-term interest to shift course and once again work toward a truly multilateral global governance.

2. Untangling of Economic and Technological Dependencies with China

The United States has pursued an economic and technological “decoupling” from China, aiming to largely undo the interconnectivity of global supply chains that has marked the past half-century. In contrast, European policymakers view the notion of “decoupling” their economies from China as unrealistic and incredibly damaging. Both sides agree, though, that China’s (re)turn to state capitalism warrants the need to reconsider parts of the economic relationship with China, protecting areas that are mutually beneficial and mitigating risks in areas of concern. “Untangling,” “diversifying” or “rebalancing” may be more broadly acceptable concepts, also for China.

Concerns include surveillance, espionage, maintaining competitiveness in key frontier technologies, R&D and innovation, technical standards, and how U.S. and European governments and private industry should respond to China in areas where its indigenous innovation has begun challenging other developed countries for global supremacy. 5G has become a model case for dealing with new technologies with potential national security risks. Even though Europeans chafed at U.S. pressure on the issue, the experience has given rise to an awareness that more discussions and regulatory challenges are on the horizon, for example in critical technologies such as AI, semiconductors and quantum technologies. European and American governments should proceed by aligning their regulatory environments for technology companies and technology use.

Europeans are strongly committed to and depend on open markets and fair competition. While Washington and Brussels share concerns about China’s state capitalism and its companies’ unfair advantages, Europeans have also been alarmed by the protectionist thrust of “America First.” A U.S. commitment to free trade and open markets (including a swift resolution to contentious issues like

steel and auto tariffs, the Boeing-Airbus conflict or WTO dispute settlement) would create the basis for a joint approach toward China.

3. Forging a Shared Vision for Security in the Asia-Pacific region

Unlike the United States, EU countries are insignificant security players in Asia Pacific. Nevertheless, Europeans have acknowledged that they need to take more responsibility as a security actor and that there is a direct connection between prosperity in Europe and security and stability in Asia, e.g., because of strategic lines of trade and communication.

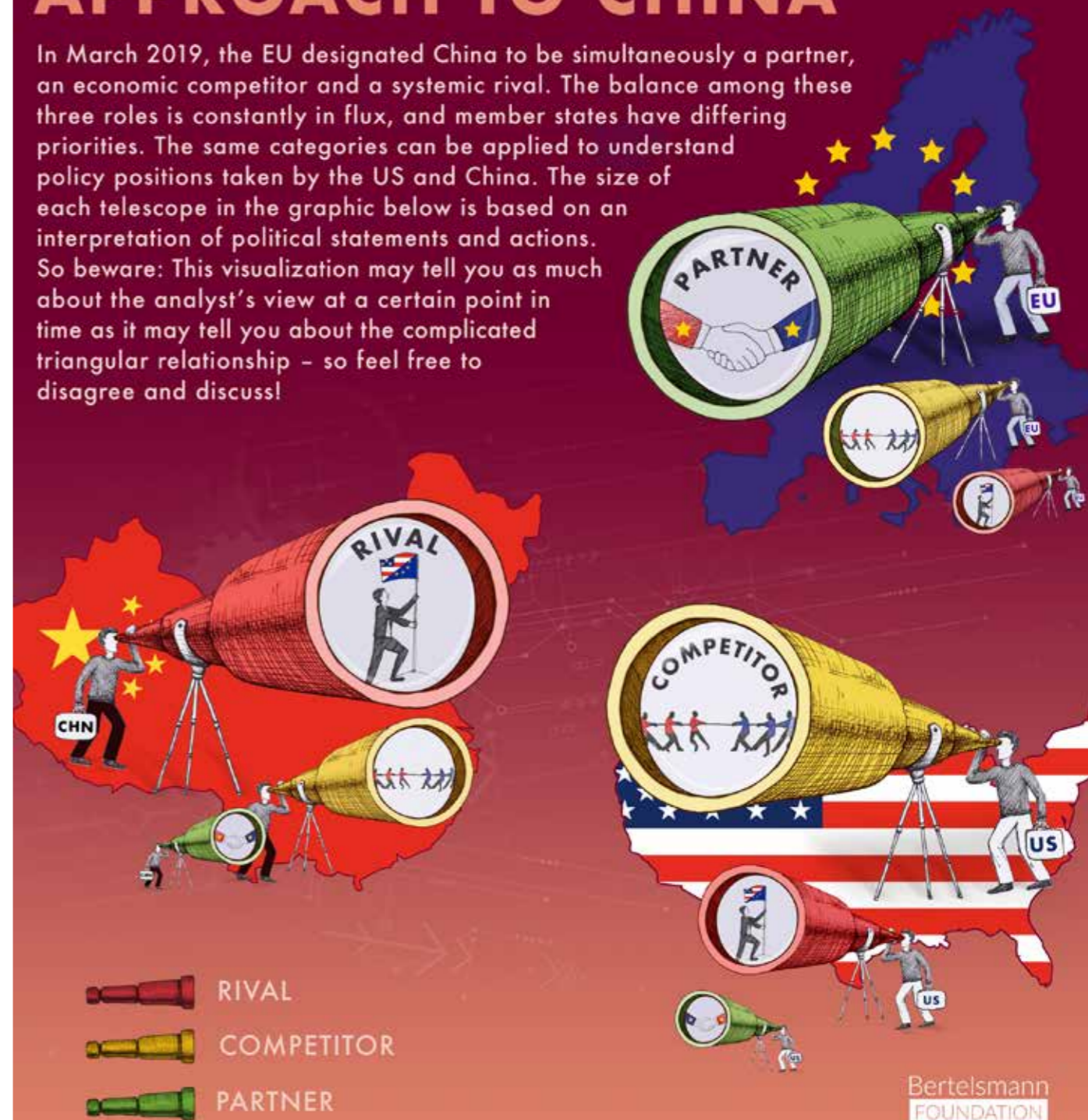
With Taiwan again rising as a potential security hot spot, the United States and European countries need to develop a joint understanding of the potential scenarios. The United States has extensive unofficial security ties and commitments to Taiwan, while European nations do not. European governments have long viewed the tensions around Taiwan as an issue of little practical political relevance. European policy planning is still based on the assumption that the status quo can be taken for granted. But this is no longer the case. European policymakers are beginning to take seriously the possibility of an escalation around Taiwan, given the potential political and economic impact. European states, societies, businesses and parliaments have extensive ties with Taiwan—all of which would be imperiled if the security situation escalates.

Taiwan, therefore, should be on the official U.S.-EU dialogue list. Europe needs to develop a clear understanding of what the United States will expect from its partners in case of a crisis. Likewise, the Biden administration needs to know what it can expect and ask from its European partners and what Europeans expect in return. While these discussions are unlikely to significantly impact the security calculations in Asia-Pacific in the short and medium term, forging a joint vision is inevitable for long-term global stability.

WHEN PERCEPTION DRIVES POLICY:

SEARCHING FOR A TRANSATLANTIC APPROACH TO CHINA

In March 2019, the EU designated China to be simultaneously a partner, an economic competitor and a systemic rival. The balance among these three roles is constantly in flux, and member states have differing priorities. The same categories can be applied to understand policy positions taken by the US and China. The size of each telescope in the graphic below is based on an interpretation of political statements and actions. So beware: This visualization may tell you as much about the analyst's view at a certain point in time as it may tell you about the complicated triangular relationship – so feel free to disagree and discuss!





Strengthening Transatlantic Resilience to Foreign Cyberthreats

By Brandon Bohrn

I. ISSUE OVERVIEW

The world of warfare is changing — and rapidly. As traditional boots-on-the-ground military conflicts have dwindled in the past decade, the world has seen an explosion of kinetic-cyberattacks on militaries, governments, businesses, and individuals alike.

As globalization and technological advancements continue to link our world, unilateral methods of deterrence, defense, and counteraction against cyberthreats will no longer do. Instead, such threats require strong partnership. And for the U.S., that natural partner is a tried and tested one — NATO.

The past four years of the Trump administration have tested NATO's cohesion and raised concerns among allies over the U.S. commitment to the alliance. Dangerously, in that same time, four state actors — China, Russia, Iran, and North Korea — have stepped up their malign cyber activity, while nonstate hackers, cybercriminals, and terrorists have disrupted networks, protocols, and customs worldwide.

Phishing campaigns, denial-of-service attacks, and ransomware are but some of the tactics employed. But while methods and intentions vary, the damage is not contained within a bubble. Instead, the repercussions of an attack on the European grid can be felt thousands of miles across the Atlantic, and vice versa.

Past damages, current threats, and impending dangers offer an opportunity. Americans, Canadians, and Europeans have come to appreciate the dangers posed by malicious cyber activity. This point of mutual interest offers a chance for the United States

to (1) mend relations with its traditional allies and (2) become more resilient to foreign cyberthreats through transatlantic partnership.

II. POLICY OBJECTIVES

On both sides of the Atlantic, escalating cyberattacks over the past few years have fueled a growing sense of urgency within NATO to continue improving its cyber capabilities. Often, however, debates and approaches betray an imperfect binary understanding of how cybersecurity works — a network is either secure or insecure. Instead, the U.S. and its NATO allies need to drive home the concept of resilience as the goal of their policymaking.

Despite the fissures created by the Trump administration in the alliance, U.S., Canadian, and European interests align on many areas of cyberspace. Certainly, the impact of cyberthreats on both sides of the Atlantic and the shared sense of urgency to neutralize such threats is key. These shared interests will serve as the foundation for rebuilding trust in the relationship and will ultimately foster increased transatlantic resilience moving forward.

1. Increase proactive measures of cyber defense together with deterrent and reactive measures.
2. Work with NATO allies to reinforce cybersecurity and defense infrastructures.
3. Enforce the rules-based order for cyberspace and improve methods for detecting the origins of attacks to hold offenders accountable.

III. CYBER POLICY ACTION ITEMS

1. Increase Proactive Measures of Cyber Defense together with Deterrent and Reactive Measures

Over the past 15 years, NATO has adapted quickly to the rapidly evolving cyber landscape. Since the 2016 Warsaw Summit, it has recognized cyberspace as an official domain of warfare, in addition to its traditional air, land, and sea operational theaters.

But how NATO engages cyberspace is often a point of contention within the alliance. Cyber strategies tend to be reactive. As the increasing number of cyberattacks on the transatlantic community show, these methods appear to be missing the mark.

History has shown us that operating from a mainly defensive position can backfire. In a traditional military setting, a physical contingent of troops barricaded in a forward operating base allows hostile forces to operate freely outside the perimeter, gaining time to shore up resources, probe for weaknesses, and ultimately coordinate successful attacks. Currently, the U.S. and its 29 NATO allies are under constant barrage from malevolent cyber forces operating freely outside the wire.

Instead of relying predominantly on reactive measures, the U.S. should push NATO to extend its reach and increasingly deploy proactive campaigns of cyber defense, focused on observing adversaries, monitoring network vulnerabilities, increasing training regimens, and testing systems to disrupt and prevent adversarial cyber operations.

The U.S. Cyber Command has already adopted similar methods of persistent engagement, which are enhanced through cooperation with allies. By combining their efforts, the U.S. and NATO can more effectively disrupt foreign cyber activity and thus reclaim the cyber advantage.

2. Work with Allies to Reinforce Cybersecurity and Defense Infrastructures

Although NATO is often defined by its collective defense clause under Article 5 of the Washington Treaty, Article 3 is frequently overlooked: "Allies, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack."

In addition to reconfirming its commitment to Article 5, the U.S. should work with NATO allies to continue reinforcing cybersecurity and defense infrastructures under Article 3.

NATO has committed to improving its cyber infrastructures in recent years. In July 2016, its members signed a pledge to boost their respective cyber defenses. In the same year, European Union member states adopted a directive on network information and security establishing an EU-wide system to respond more quickly and effectively to cyberattacks.

These NATO and European initiatives are helping the transatlantic community better withstand cyberthreats, but the cyber landscape is in constant flux. While technology advances our digital world by fueling innovation and making processes more private, faster, and secure, it does the same for cyber actors with malicious intent. Major cyberattacks on American and European hospital systems during the COVID-19 pandemic, and the most recent cyber breaches of the U.S. government, show that while cyber defense mechanisms have improved, there is still major work to be done.

Building on the work of the U.S. Cybersecurity and Infrastructure Agency — which produces annual reports detailing risks to federal, state, and local infrastructures, and facilitates the sharing of information and expertise among actors at all three levels — the U.S. should work with NATO's evolving Cyber Command to integrate similar practices.

NATO-wide infrastructure risk assessment and information sharing, support, and coordination will, in turn, develop more resilient defense mechanisms against foreign cyberthreats in the future.

3. Enforce the Rules-based Order for Cyberspace and Improve Methods for Detecting the Origins of Attacks to Hold Offenders

Accountable

Cyberspace is a nontraditional domain of warfare, where laptops and servers send digital salvos across an invisible battleground. The damage from those attacks has pushed the international community to press for rules by which countries should engage this space. With an internationally recognized rules-based order, the U.S. and its allies can encourage adversaries to play within the prescribed boundaries, and in turn, hold offenders accountable.

In 2019, the U.S. and 27 other countries (including 20 NATO allies) declared their renewed commitment to an international rules-based order on cyberspace, focused on protecting critical infrastructure, preserving free and fair elections, building norms, and reducing the risks of conflict from cyber incidents. The U.S. should convene with the nine remaining NATO members to deliver a new alliance-wide pledge to this international commitment.

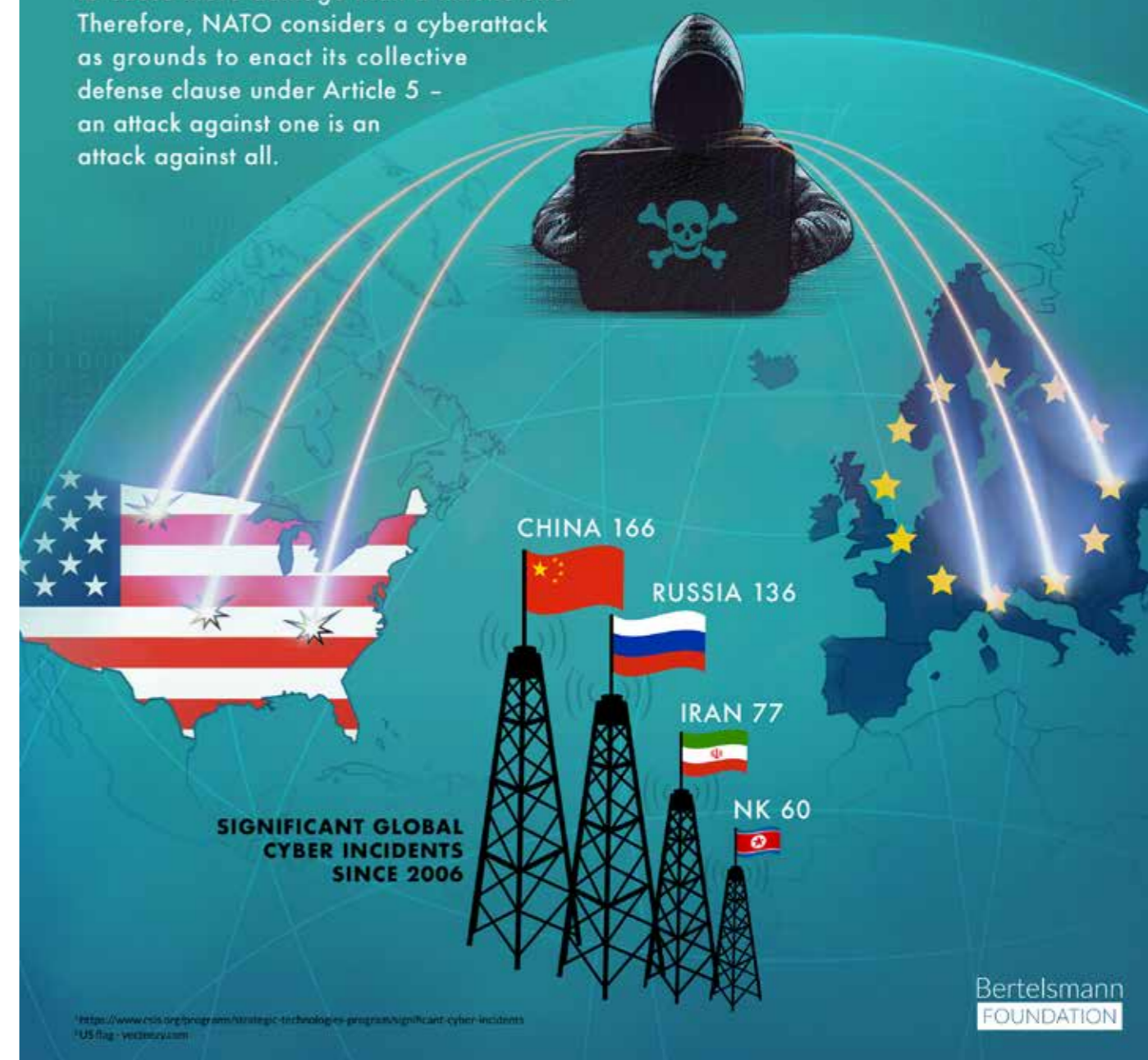
While most state-sponsored cyberattacks are attributed to China, Russia, Iran, and North Korea, many attacks go unattributed. Many of these assaults are traced to the usual suspects, but technological advancements have extended cyber capabilities beyond the ranks of governments to groups and even individuals with their own agendas.

It is hard to fight an enemy that is concealed. It is even harder to fight an enemy that is unknown. Therefore, to enforce the rules-based international order for cyberspace, the U.S. and its NATO allies should work together — share more information, standardize

investigative procedures, and the like — to improve their methods for detecting the origins of cyberattacks. By operating within an internationally agreed set of guidelines and improving attribution capabilities, the U.S. and its NATO allies position themselves better to hold cyber adversaries accountable and discourage future offenses.

CYBERTHREATS TO THE TRANSATLANTIC COMMUNITY

The U.S. and Europe are increasingly coming under fire from four state actors – China, Russia, Iran, and North Korea. Service-denial attacks, phishing campaigns, eavesdropping, malware, and election interference are threatening governments, businesses, and individuals on both sides of the Atlantic. A cyberattack has the potential to cause more damage than a kinetic one. Therefore, NATO considers a cyberattack as grounds to enact its collective defense clause under Article 5 – an attack against one is an attack against all.





Changing Health Priorities and Novel Threats

By Guido Vanham

I. ISSUE OVERVIEW

Over the last few decades, health care systems and the general public in most affluent countries lost interest in addressing the challenges posed by infectious diseases. The main perceived health threats were the so-called chronic non-communicable diseases (NCD), such as cancers, cardiovascular and metabolic diseases (obesity, diabetes, etc.), chronic obstructive pulmonary disease, and typical elderly conditions such as frailty and Alzheimer's disease. While most NCDs have a complex, not fully elucidated genetic background, and they increase with age, we know they are associated with a "Western lifestyle," including eating too much fat and sweets, moving too little, smoking, and drinking alcohol — all of these bad habits at least partly linked to the stress and the social alienation of a hectic consumption-oriented society. Besides the affluent nations in the North, NCDs are also on the rise in middle-income "emerging" economies, while in the lower-income developing countries of sub-Saharan Africa, infectious agents remain prominent causes of disease and death.

The perception that infectious diseases are generally in decline was partly fed by global and local success stories. Smallpox has been wiped out and polio has nearly disappeared, thanks to massive vaccination campaigns. Similarly, vaccines against hepatitis B and human papillomavirus (HPV) have markedly reduced disease burdens, including deadly liver and cervical cancers. Some infections transmitted by mosquitoes or other insects (so-called vector-borne infections) have been successfully combatted in some low- or middle-income areas, as evidenced by the near elimination of malaria in Vietnam and the steep reduction in sleeping sickness in central Africa.

Despite these important victories there are several worrying developments:

Any bacterial infections that in the 1980s were curable with antibiotics have become increasingly resistant until they are essentially untreatable, thanks in part to the improper use of antibiotics in human health care and commercial livestock farming. It is difficult to estimate how many thousands of people die each year as a consequence, but their numbers are on the rise. Development of new antibiotics to overcome resistance is lagging and antibiotic resistance continues to increase at a frightening pace.

Various parasitic and viral diseases, including malaria, dengue, Zika, chikungunya, and West Nile, that are transmitted by mosquitoes and other (sub)tropical vectors take massive advantage of climate change and international travel to conquer previously cooler uninfected areas, such as the African highlands, Mediterranean Europe, and the southern United States. Since global warming continues unabated, this "invasion" worsens with time.

In various parts of Asia and Africa, an ever-increasing number of viral infections have emerged or re-emerged in recent years, often as a consequence of increased contacts between humans and animals. Examples include SARS (severe acute respiratory syndrome), MERS (Middle East respiratory syndrome), Ebola, monkeypox, Nipah virus, and Lassa fever. Most of these viruses first behaved as localized epidemics, resulting in thousands of deaths. But some, such as SARS in 2002-2003 and Ebola in 2014-2015, spread across the globe via international travel. Fortunately, through 2019, they failed to become a pandemic, falsely reassuring health authorities in the West.

Despite these clear trends, well-known to medical experts, most public health authorities in Europe and North America failed to take all this evidence seriously, even as recently as a year ago when a new coronavirus, very similar to the SARS virus of 2002-2003, emerged in Wuhan, China, and caused an epidemic of deadly pneumonia. In the West, there was a sense of *déjà vu* and an almost arrogant optimism that this outbreak would be like previous ones, either petering out before it reached our shores or easily contained if it managed to spread this far. In those early days, I attended a webinar by a famous British epidemiologist who self-confidently claimed that the British and U.S. authorities were much better prepared than China to stop a viral epidemic.

Even after we witnessed a first devastating wave in the spring, unseen in our part of the world since the Spanish flu, politicians and the general public failed to understand the dynamics of an exponential growth curve. It took our societies a very long time to realize that you cannot make compromises with a virus and that you need to accept uncertainties, be prepared to learn from mistakes, and communicate honestly about "progressive understanding." Economic pressure, popular discontent, and dissenting "alternative" experts were pushing governments to postpone the necessary measures for too long or to relax them too early, with a staggering second (or even third) wave and even more — preventable — economic damage and human suffering as a result. The worrying conclusion is that most Western democracies managed the crisis poorly, with unnecessary dire consequences.

II. POLICY OBJECTIVE

SARS-CoV-2 is a terrible virus from a clinical and epidemiological perspective, but it has several big advantages over the "difficult" viruses (and other pathogens) for vaccine development:

Viruses in the corona family do mutate (as we all know from the lay press) and can even recombine,

but they change and evolve much more slowly than HIV, the hepatitis C virus, and influenza. They are in fact genetically relatively stable. That sounds odd, now that British, South-African and Brazilian variants are rapidly spreading, but this variation is still orders of magnitude more stable than what we see in HIV, for instance. It is not unexpected for Coronaviruses, as of today, will be manageable with the present generation of vaccines. Clearly, just like in Influenza, adaptations in vaccines might be needed in the near future.

Monoclonal antibodies that neutralize SARS-CoV-2 have been identified in COVID patients mere weeks after infection, implying that the human immune system doesn't need a lengthy co-evolution process (as observed in HIV infection) to develop protective antibodies. Some of these highly potent SARS-CoV-2 monoclonal antibodies are already being developed as a treatment by companies such as Regeneron: They were used to treat former U.S. President Donald Trump and they have now been approved by the U.S. Food and Drug Administration.

SARS-CoV-2 is genetically similar to SARS-CoV-1, the virus that circulated in 2002-2003. They use the same cellular receptor (and present a very similar clinical picture). Despite the fact that SARS-CoV-1 disappeared in humans, it was further investigated in several specialized labs in the world. Very interesting animal models were developed and, very importantly, various experimental vaccines against SARS-CoV-1 were developed and shown to be efficacious in these animal models. These vaccination principles and animal models were immediately useful in the development of a SARS-CoV-2 vaccine.

Over the last quarter of a century, vaccine science in general has developed many novel concepts, including messenger RNA, viral vectors, nano-formulations, and powerful adjuvants, which have been successfully tested in preclinical and early clinical models of various infectious diseases and

cancers. In 2020, these concepts were very much ready for prime time. These novel vaccine concepts are very flexible, in that it takes little time and effort to adapt the vaccines to new variants, if needed.

Now that COVID vaccines have become available, affluent countries have reached agreements with the Western vaccine producers in order to rapidly vaccinate their populations, but at a relatively high price, while many poorer countries will have to wait much longer. The global COVAX initiative was established to ensure equitable access to COVID vaccinations by having wealthy donors fund a vaccine stock for poorer countries. Unfortunately, COVAX has secured only 700 million doses, a fifth of the necessary one dose per person for poorer countries, while the United States, EU, Canada, and Australia have options on many billions of doses, i.e. more than five doses per inhabitant (assuming every vaccine makes it through the approval process). Without more international solidarity we will not get the pandemic under control, as remaining human “reservoirs” of the virus will inevitably generate new variants that will challenge vaccine-induced immunity with time, likely resulting in recurrent epidemics or even pandemics.

During the SARS-CoV-2 pandemic, Western Big Pharma has lost ground to Indian, but even more importantly, Chinese companies that have developed and tested their own COVID vaccines. The Western forerunners are mainly betting on high tech and rather expensive concepts, such as messenger RNA (Pfizer-BioNtech and Moderna) or adenoviral vectors (AstraZeneca and Janssen). The Russian Sputnik V is also based on a combination of adenoviral vectors, while the Chinese and Indian forerunners rely on the more traditional inactivated whole-virus concept (Sinovac, Sinopharm, and Covaxin). These Russian, Chinese, and Indian vaccines are potentially as effective as the Western counterparts. However, the results of formal phase 3 trials are freely accessible for Western candidates, but not for the Russian, Chinese, or Indian ones, so we can't be certain of

those results. While Western companies focus on the most profitable high-income markets, the Chinese vaccines are being rolled out in selected middle-income countries.

To be complete, more advanced concepts are being developed in China and India as well, while Western companies now also actively pursue “simpler” vaccine concepts, based on inactivated virus (Valneva) or recombinant S protein (Novavax). Besides, there are well more than 150 vaccine candidates in various stages of development all over the world, some based on very innovative ideas, such as SARS-CoV-2 S protein recombinant live yellow fever or measles viruses. Even if only 10 percent of these candidates makes it to the market, companies could produce enough vaccines to protect the entire world population.

III. ACTION ITEMS

1. International Collaboration

Getting the pandemic under control will require broad international coordination and collaboration, as in the COVAX initiative. Europe, the United States, China, and India, together with emerging countries in the South such as South Africa and Brazil, should foster this equitable funding and distribution mechanism. For now, leaders in the EU and United States are focused, appropriately, on convincing their own citizens to accept the vaccine, but they must also actively support COVAX and other truly multilateral initiatives to combat the virus worldwide. It's the humanitarian, but also self-interested thing to do, since the broader and the quicker vaccines are rolled out globally, the smaller the chances of new epidemics with escape mutants. There are also economic and geopolitical reasons for not leaving the markets in lower-income, densely populated parts of the world to China and India.

2. Collaborative Network for First-Line Health Services

First-line health services should be structured in collaborative networks of health and social care for a community of 10,000-100,000 people (depending on geography and sociological factors). These first-line zones should provide basic health-related services and be linked with a second-line hospital. One of their functions would be to organize the response to infectious disease outbreaks by communicating appropriate preventive measures in the languages and adapted to the cultures of their communities. Neglect of this type of work during the pandemic has contributed to recurrent waves of disease.

3. Long-Term Crisis Management and Planning

At the country level, it is key that clear crisis-management plans are in place and need not be re-invented during each new health crisis (as has been the case in most Western countries now). Obviously, the central administration, such as the minister or secretary of health, makes decisions and proclaims measures, in continuous dialogue with experts. Other players in democracies, including lawmakers and representatives of civil society, play a part, but public health must take priority over many other considerations. Decisions must be made quickly and consistently, and they must be clearly communicated so citizens understand them and first-line health workers can support, explain, and monitor the measures.

4. Regional and International Coordination

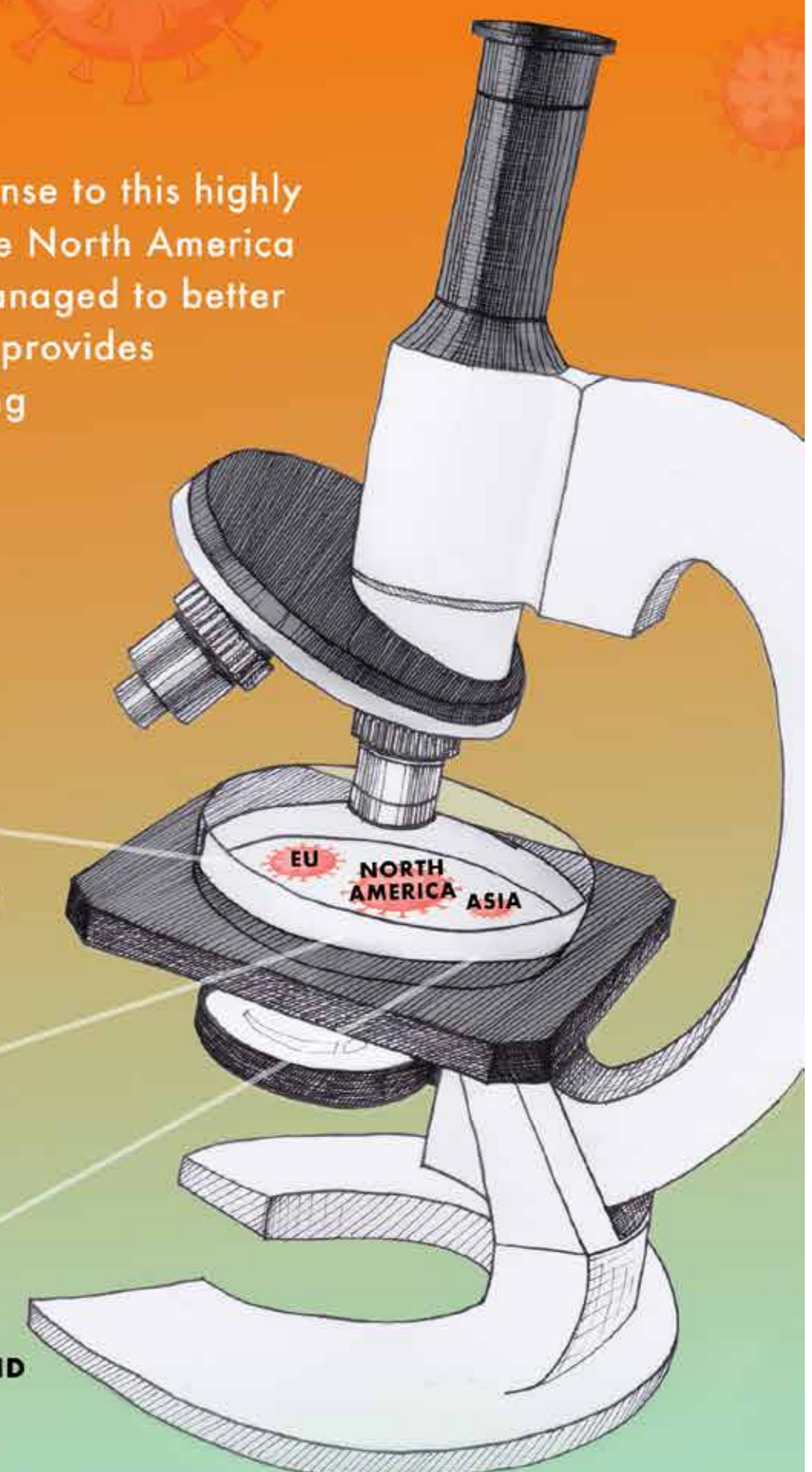
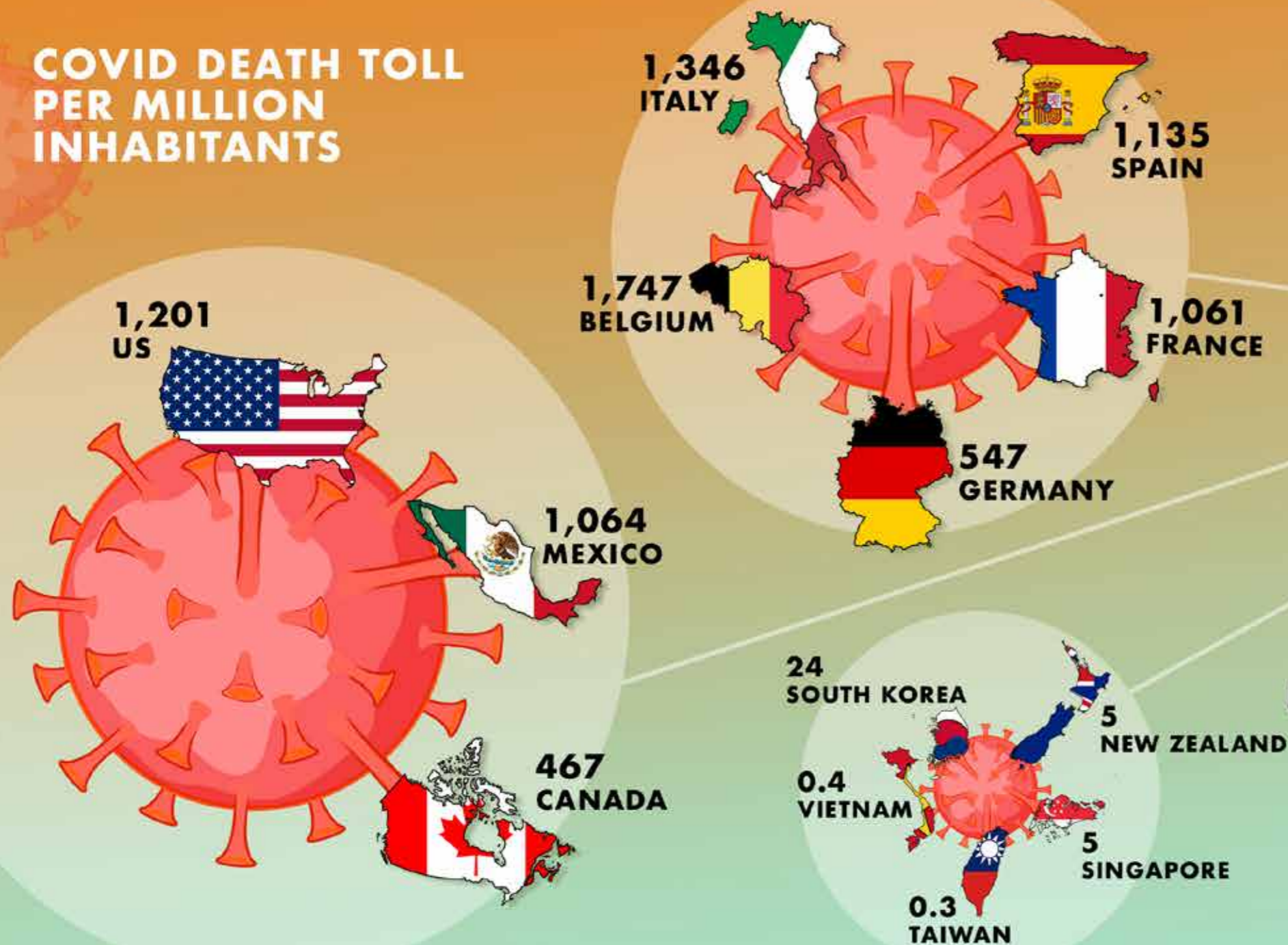
Regional and international coordination and collaboration is key in a pandemic. It makes absolutely no sense that highly interconnected states in the EU or United States take different measures at different times, or close and open borders without coordination. As we have seen, this approach allows disease to “ping-pong” around and escape

our control. Countries should be prepared to work efficiently with international health institutions across the world, ultimately under the umbrella of the WHO. These international health agencies and organizations should be well-funded, well-staffed with experts, and duly controlled, but also trusted and followed when an international health emergency arises.

MORBIDITY UNDER THE MICROSCOPE

The COVID-19 pandemic has spread to every corner of the globe, but the response to this highly infectious disease has varied widely among regions and even within them. While North America and the European Union have largely struggled to contain the virus, Asia has managed to better protect its citizens and return to some semblance of normalcy. This infographic provides a snapshot of how each region has coped with the current health crisis, revealing where to find best practices going forward.

COVID DEATH TOLL PER MILLION INHABITANTS



¹ <https://www.worldometers.info/coronavirus/#countries>



Promote, Encourage, Protect (PEP) Trade and Economic Recommendations for the Next U.S. Administration

By Emily Benson

I. ISSUE OVERVIEW

In August 2020, a derecho, or inland hurricane, damaged 8.2 million acres of corn and 5.6 million acres of soybeans in Iowa.¹ The storm caused \$4 billion in damage² and was visible from space. One irony is that a saving grace after the terrible storm was a demand³ for exports in a system of trade that contributes to this environmental devastation. The relationship between trade and the environment is a vicious feedback loop. Carbon emissions from trade and transport exacerbate environmental degradation and lead to extreme weather events, which in turn imperil global trade. That circle must be broken if we are to mitigate the climate catastrophes that threaten U.S. farms and if the United States is to remain the world's top agricultural exporter.

International shipping accounts for 2 to 3 percent of global greenhouse gas emissions, and international trade-related freight accounts for roughly 30 percent of transport-related carbon emissions. Marine shipping⁴ is the largest source of human-related sulfur oxide emissions, as well as the main source of black carbon in the Arctic. By 2050, emissions from global freight⁵ are expected to increase fourfold. Worldwide shipping vessels⁶ use 87 billion gallons of petroleum fuels annually, more than double the amount of heavy fuel oil of all cars and trucks in the United States.

One way to mitigate the negative feedback loop between climate change, supply chain fragility, and global trade is to promote trade sustainability by decarbonizing trade itself.

II. POLICY OBJECTIVE

As carbon emissions from trade and transport pollute the environment and hasten climate change, the

Biden Administration should prioritize the following policy objectives: use existing and future trade pacts to support climate change mitigation policies, decarbonize trade and related transportation, and protect agricultural supply chains by investing in new technology to fortify future food supplies. The United States should take immediate action to grow the economy, safeguard the environment, and establish the country as the global leader in agricultural technology — while maintaining its position as a top exporter of agricultural goods and services.

These core policy objectives seek to avoid a — currently likely — future in which the United States falls behind in agricultural outputs, contributes to global environmental degradation, and fails to seize the urgent opportunity to ensure that the food supply can feed a quickly growing global population. Swift action to mitigate climate change and fortify U.S. agriculture will not only grow the 21st century American economy, but it will also boost U.S. geopolitical standing in a world increasingly under siege from climate catastrophes. Enacting the following policy prescriptions will create a virtuous circle that creates jobs, promotes free trade, and builds a resilient future.

III. ACTION ITEMS

1. Promote Sustainability in Free Trade

Agreements

NAFTA was the first free trade agreement (FTA) to link trade and the environment. Twenty-six years later, Article 24.8 of the United States-Mexico-Canada Agreement holds the parties to their commitments under seven specific multilateral environmental agreements (I). All future FTAs to which the United States is a signatory should respect the supremacy of these pacts (II).

Additionally, the United States should reject “energy neutrality” clauses in any future free trade agreements it signs. Instead, it should stipulate that no tariffs be levied on the trade of renewable-energy goods and services, in an effort to spur production of renewable energy in signatory countries and create jobs within related industries. An increase in production of wind- or solar-generated electricity would also drive down petroleum transportation via maritime shipping.

2. Encourage biofuel use in maritime shipping

By international agreement, ships sailing within 200 miles of the coasts of Canada and the United States must use fuel with no more than 0.1 percent sulfur content. The next administration should work with Congress to go further and require that any U.S.-registered shipping firm maintain maximum sulfur levels of 0.1 percent anywhere at sea, not just near the coast.

Retrofitting maritime vessels for lower carbon output and building new ones with cutting-edge environmental technology takes time and money. Policymakers should help shipping companies comply with the stricter sulfur emissions rule by subsidizing research into shipping-related biofuels to ease the industry's reliance on heavy fuel oil. In accordance with Environmental Protection Agency rules and regulations, the administration and Congress should provide \$10 billion in renewable-energy subsidies to the U.S. Department of Energy (III). This policy change would further assist in implementing Article 24.10 of the USMCA, on protecting the marine environment from ship pollution, particularly 3(e), relating to emissions from ships.

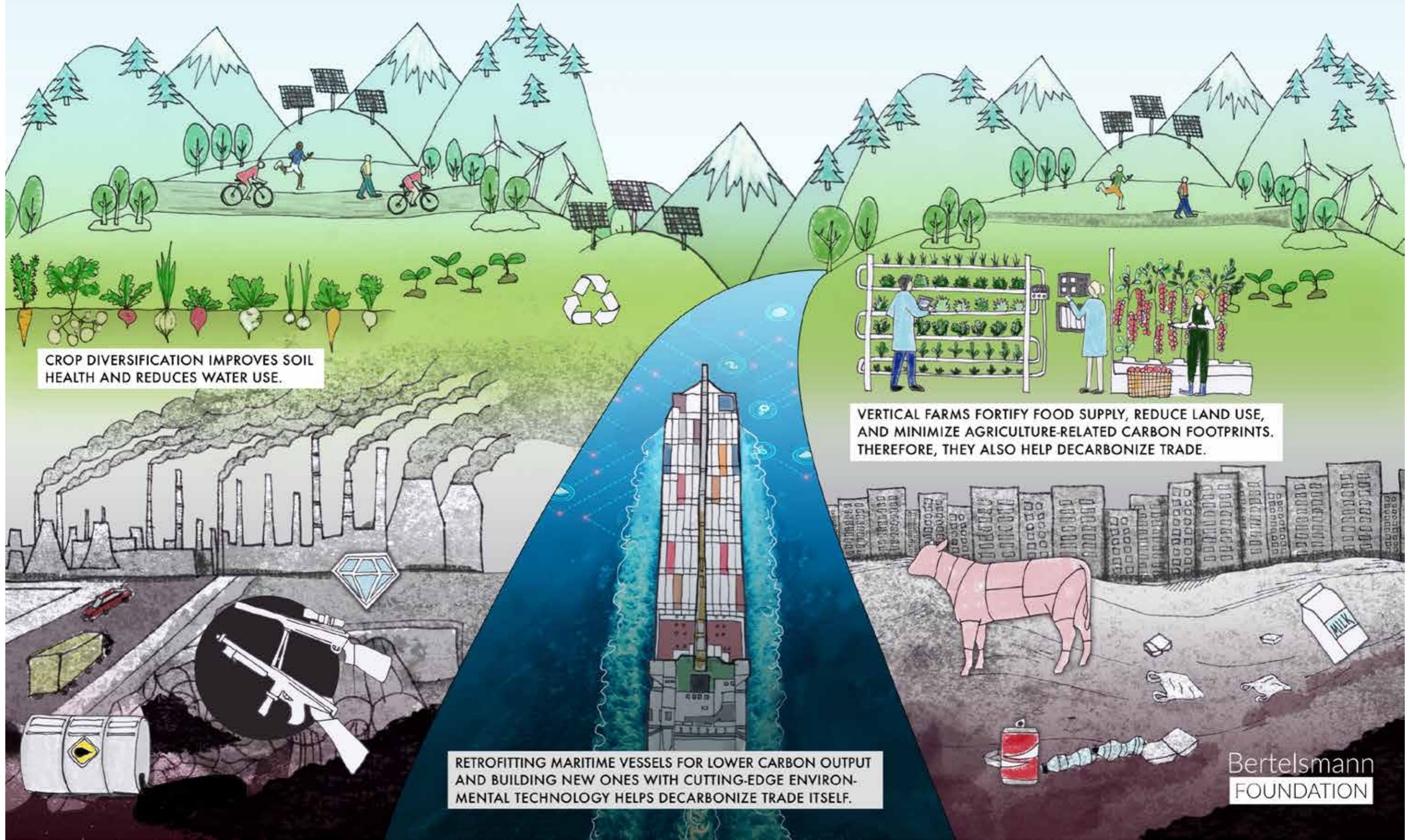
3. Protect Agricultural Trade Supply Chains

In 2018⁷, the United States was the world's top exporter of farm products. Nascent agricultural technology could be a game-changer, determining who takes the lead in the coming decade. For example, in 2019, plant-based protein retail sales⁸ grew by 11 percent,

to \$5 billion, far outpacing traditional food retail sales growth and demonstrating an appetite for goods and services produced with agricultural technology⁹(IV). Congress should allocate \$500 million for open-source agricultural-technology research to organizations such as public universities, the U.S. Department of Agriculture, and private companies researching protein alternatives. These investments tend to have local and national multiplier effects, helping farm communities as well as faraway consumers. Furthermore, this funding will support Article 24.24 of the USMCA, which encourages the development and proliferation of “clean technologies.” A redirection of those funds toward food-supply resilience would spur innovation-based economies among USMCA signatories and across the globe, while fortifying and decarbonizing global trade (V).

SUSTAINABLE TRADE

The relationship between trade and the environment is a vicious feedback loop. Carbon emissions from trade and transport exacerbate environmental degradation and lead to extreme weather events, which in turn imperil global trade. To mitigate climate catastrophes that threaten U.S. farms that in turn threaten the country's role as a top agricultural exporter, we should promote sustainability by decarbonizing trade itself.



CROP DIVERSIFICATION IMPROVES SOIL HEALTH AND REDUCES WATER USE.

VERTICAL FARMS FORTIFY FOOD SUPPLY, REDUCE LAND USE, AND MINIMIZE AGRICULTURE-RELATED CARBON FOOTPRINTS. THEREFORE, THEY ALSO HELP DECARBONIZE TRADE.

RETROFITTING MARITIME VESSELS FOR LOWER CARBON OUTPUT AND BUILDING NEW ONES WITH CUTTING-EDGE ENVIRONMENTAL TECHNOLOGY HELPS DECARBONIZE TRADE ITSELF.



A New Start for Global Refugee Protection? How a Transatlantic Alliance between the United States, Canada, and the EU could be a Game Changer

By Mehrdad Mehregani

I. ISSUE OVERVIEW

The world is in bad shape right now, especially for the millions fleeing war, violent conflicts, and persecution. According to the U.N. refugee agency (UNHCR), the number of forcibly displaced people in the world has risen to 80 million. This is an all-time high and almost twice as many people as in 2012 when 42.7 million were seeking refuge. The vast majority of the forcibly displaced (86 percent) are hosted in developing countries.

UNHCR estimates that 1.4 million refugees are particularly vulnerable and should be resettled to countries more able to take care of them. Particularly vulnerable means that these are refugees with increased protection needs, i.e. because they are survivors of violence and torture, unaccompanied minors, women on their own with their children, or refugees with particular physical and medical needs. Despite the high number of refugees in need of better protection, there is a significant gap between resettlement needs and actual resettlements. In 2019, only 63,726 refugees were resettled. In 2020, the number plummeted to 22,800, especially due to the COVID-19 pandemic.

Strikingly, 67 percent of the world's refugees come from just five countries of origin. 6.6 million people have fled the ongoing war, terror, and persecution in Syria. The war in Afghanistan has caused 2.7 million refugees to flee the country. 2.3 million people have fled from South Sudan and 1 million Rohingya were forced to escape Myanmar. 3.7 million people have fled from Venezuela.

II. POLICY OBJECTIVE

Global refugee protection needs a restart. While 80

million people have been forcibly displaced from their homes, this has not led to enough global burden sharing necessary to face this challenge. The U.N. Global Compact on Refugees (GCR), adopted in 2018, was an important attempt to foster solidarity and improve the situation of refugees. Since then, however, there was a lack of political momentum to achieve these goals.

To make things worse, the COVID-19 pandemic has hit refugees particularly hard and hampered efforts to protect and resettle the most vulnerable among them. With the advent of the Biden administration, however, the outlook has become much brighter. Together, the United States, Canada, and the EU could lead the way and revitalize efforts to protect refugees. The formation of a new transatlantic alliance on refugee protection could be a game changer and inspire other willing states to join the endeavor to help save refugees around the globe. To achieve this, the new transatlantic alliance would need to focus on three key objectives:

1. Strengthening the states who host the most refugees.
2. Enhancing resettlement capacities to save the world's most vulnerable refugees.
3. Addressing the causes of forced displacement by rethinking foreign policy .

III. ACTION ITEMS

1. Strengthening the States who Host the Most Refugees

According to UNHCR, around seventy-three percent of refugees are hosted in neighboring countries. Often, these countries are not financially wealthy, but they have shouldered most of the responsibility. The states that host the majority of refugees (in absolute

numbers) are Turkey (3.6 million), Colombia (1.8 million), Pakistan (1.4 million), Uganda (1.4 million), as well as Germany. Germany is an exception in this list given its financial strength, but it has processed 1.8 million first-time asylum applications since 2015 according to the German Federal Office for Migration and Refugees (BAMF). Looking at the more precise measure of refugees as a percentage of a country's population, Lebanon and Jordan top the list of refugee hosting states in the world. In Lebanon, it is estimated that 25 percent of the population are refugees, including an estimated 1.5 million refugees from Syria. Jordan has also received a disproportionately high number of refugees in relation to its population size, including at least 660,000 refugees from Syria who are registered with UNHCR.

The data illustrates that wars and violent conflicts in a country of origin have enormous economic and political impacts for neighboring states. Thus, it is essential to better support the countries that host the majority of refugees. Support should include tailor-made financial contributions for integration projects, especially on housing, health care, education, and labor-market integration, as well as strengthening international organizations on the ground (i.e. UNHCR, World Food Program). Support measures must avoid reproducing protracted situations for refugees. Instead, they need to enable refugees to become independent contributors to their host societies quickly. Access to health care, education, and the right to work should be priorities. Top refugee-hosting states should also receive priority access to vaccines against COVID-19.

2. Enhancing Resettlement Capacities to Save the World's Most Vulnerable Refugees

Supporting refugee-hosting states is crucial, but not enough. To better protect the world's refugees, it is essential to prioritize resettlement, which offers controlled legal pathways to safety for the most vulnerable. Refugees are chosen based on

vulnerability criteria by UNHCR in cooperation with states that are willing to host them. Prior to their arrival, they are properly vetted and screened for health issues.

While 1.4 million refugees are particularly vulnerable and need to be resettled, resettlement numbers are very low right now, especially because of the COVID-19 pandemic. The decrease in resettlements, however, was also a consequence of former U.S. president Donald Trump and his administration's retreat from saving refugees. For decades, the United States was the strongest actor in the field, helping hundreds of thousands of displaced people. This dramatically changed in 2017 when refugee admissions were cut year after year to just 18,000 places in 2020 compared to 85,000 places during President Barack Obama's last year in office.

The presidency of Joe Biden, however, is a game changer. He has pledged to restore the United States' historic commitment to be a safe haven and to resettle 125,000 refugees per year. The EU has the ability to join this effort and increase its capacities. In cooperation with Canada, which has been a leading example and global champion for resettlement, the EU could offer 125,000 resettlement places. Together, the transatlantic alliance could provide shelter to 250,000 refugees per year. Resettlement would also benefit community building in host states, as there have been promising community sponsorship programs with civil society groups helping refugees integrate into society.

3. Addressing the Causes of Forced Displacement by Rethinking Foreign Policy

Five countries in the world are responsible for almost 70 percent of all refugees, with Syria at the top of this notorious list. However far away these and other wars and conflicts may have seemed, it has become evident that they directly affect us — or may do so in the future. The key question is: How do we, as a

transatlantic alliance, address the gross violations of human rights that are causing people to flee? While there is no silver bullet, one thing is clear: Any effective policy must involve stopping the supply- and money chains that enable the perpetrators of human rights violations.

The World Refugee Council has made a compelling proposal to freeze and seize the assets of the creators of refugee situations. Magnitsky-style legislation, which was also introduced in the EU at the end of 2020 ("Global Human Rights Sanctions Regime") could be expanded to use frozen assets to help refugees and limit the powers of those who violate human rights.

The transatlantic alliance could also set up a working group on fighting human rights violations and combatting root causes. This would help us have a more comprehensive discussion on expanding and improving our foreign policy toolbox. Combatting root causes is not just a "refugee issue." Essentially, it is about our strength as democracies to uphold human rights in a world that has been witnessing a steady rise in aggressive authoritarianism.

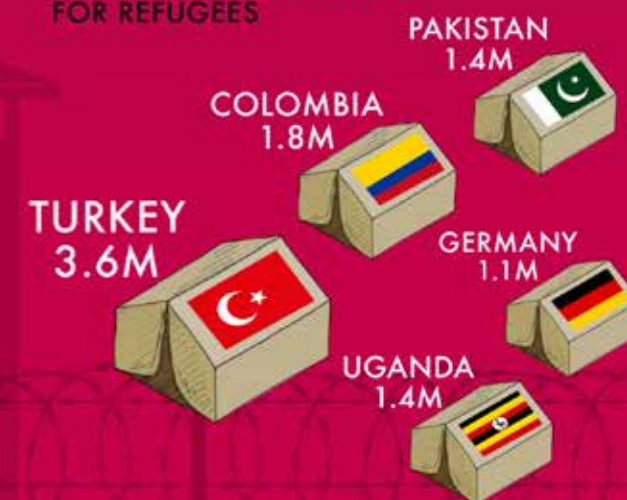
A PLACE TO CALL HOME

The world is particularly volatile at the moment, especially for those fleeing war, violent conflicts, and persecution. As millions of people have been driven from their homes, potential host governments around the globe are grappling with how to address this challenge. Some search for ways to resettle and integrate refugees, while others pursue policies that shirk their international obligations. As new push factors bubble to the surface, the urgency to reverse this trend has already arrived. This infographic provides a snapshot of who is on the move and where they're headed.

TOP 5 COUNTRIES OF ORIGIN FOR REFUGEES



TOP 5 HOST COUNTRIES FOR REFUGEES



FORCIBLY DISPLACED PEOPLE WORLDWIDE
80M



FORCIBLY DISPLACED CHILDREN
30-34M



NUMBER OF REFUGEES RETURNED OR RESETTLED
120K



Bertelsmann FOUNDATION

<https://www.unhcr.org/refugee-statistics/>

¹ Brandon Lawrence. "Iowa's changing climate is having a bigger impact on agriculture." WeAreIowa.com. 24 August 2020. <https://www.weareiowa.com/article/weather/iowa-explainer-climate-change-agriculture-severe-weather/524-d4876bf2-6213-410b-8ade-df365bd8a88f>.

² "Iowa 'hurting' after powerful storm as governor seeks nearly \$4 billion in disaster aid." CBS.com. 18 August 2020. <https://www.cbsnews.com/news/iowa-storm-derecho-seeking-4-billion-dollars-disaster-aid/>.

³ Steve Gravelle. "Demand from overseas helps Iowa farmers after derecho." The Gazette. 12 November 2020. <https://www.thegazette.com/iowa-farmers-derecho-damage-corn-harvest-soybean-crop-storage-20201112>.

⁴ Naya Olmer, Bryan Comer, Biswajoy Roy, Xiaoli Mao, and Dan Rutherford. "Greenhouse Gas Emissions from Global Shipping, 2013-2015." The International Council on Clean Transportation. October 2017. https://theicct.org/sites/default/files/publications/Global-shipping-GHG-emissions-2013-2015_ICCT-Report_17102017_vF.pdf.

⁵ "The Carbon Footprint of Global Trade: Tackling Emissions from International Freight Transport." International Transport Forum. <https://www.itf-oecd.org/sites/default/files/docs/cop-pdf-06.pdf>.

⁶ Mike Kass, Zia Abdullah, Mary Biddy, Corinne Drennan, Troy Hawkins, Susanne Jones, Jonathan Holladay, Doug Longman, Emily Newes, Tim Theiss, Tom Thompson, Michael Wang. "Understanding the Opportunities of Biofuels for Marine Shipping." Energy and Transportation Science Division, U.S. Department of Energy. December 2018. <https://info.ornl.gov/sites/publications/Files/Pub120597.pdf>.

⁷ U.S. Department of Agriculture. Economic Research Service. "Agricultural Trade." Available here: <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/agricultural-trade/>.

⁸ John Cumber. "China's Plan to Beat the U.S. in the Trillion-Dollar Global Bioeconomy." Forbes. 3 February 2020. <https://www.forbes.com/sites/johncumber/2020/02/03/china-now-out-invests-america-in-the-global-bioeconomy-by-30/#42ef9b177440>.

⁹ Kyle Gaan. "Plant-Based Food Retail Sales Hit \$5 Billion." The Good Food Institute. 3 March 2020. <https://www.gfi.org/blog-spins-data-release-2020>.

(I). The seven MEAs are the Convention on International Trade in Endangered Species of Wild Fauna and Flora; the Montreal Protocol on Substances that Deplete the Ozone Layer; the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships; the Convention on Wetlands of International Importance Especially as Waterfowl Habitat; the Convention on the Conservation of Antarctic Marine Living Resources, the International Convention for the Regulation of Whaling, and the Convention for the Establishment of an Inter-American Tropical Tuna Commission. Source: USMCA Article 24.8, Multilateral Environmental Agreements, 4.

(II). Many, but not all, free trade agreements include chapters on environmental responsibility and sustainability.

(III). The Environmental and Energy Study Institute conservatively estimates that the U.S. government provides fossil fuel industries with subsidies of \$20 billion annually. In 2018, the EPA estimated that industry and transportation combined accounted for 50.2 percent of U.S. greenhouse gas emissions. Thus, while not sufficient in the long term, an initial subsidy of \$10 billion for renewable energy research and grant funding, specifically focused on greenhouse gas emission reductions in transportation and by industry, is adequate. Furthermore, \$10 billion in transportation would be applicable not only to maritime shipping but could also be used to bolster research in other supply chain transportation sectors, such as electric autonomous vehicles.

(IV). This success was moderated by a \$5 billion loss among hog farmers in 2020. In addition to acute environmental degradation, conventional animal agriculture leads to tremendous waste. During the COVID-19 economic shutdown, meat processing facilities were forced to halt operations, leading to the shooting or gassing of millions of pigs and chickens. Increasing environmental degradation increases the likelihood and frequency of pandemics, thereby increasing pressure on an already fragile agricultural system.

(V). The United States continues to fall behind others in investment in agricultural technology and our bioeconomy. Last year, the European Union announced it would allocate over \$15 million in funding for plant-based protein research. EU member states, such as the Netherlands, are also investing heavily in similar research. China has agreed to invest \$300 million in cutting-edge technology to bolster its bioeconomy.